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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/441,592	11/17/1999	KEITH E. LEJEUNE	99-041	4572
HENRY E BARTONY JR LAW AND FINANCE BUILDING 429 FOURTH AVENUE SUITE 1801 PITTSBURGH, PA 15219			EXAMINER NAFF, DAVID M	
			ART UNIT	PAPER NUMBER
			1651	

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Kc

Office Action Summary	Application No. 09/441,592	Applicant(s) LEJEUNE ET AL.	
	Examiner David M. Naff	Art Unit 1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 & 3-10 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 & 5-10 is/are rejected.
- 7) ☒ Claim(s) 3 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

The response of 8/14/03 presented arguments and did not amend the claims.

Claims examined on the merits are 1 and 3-10 which are all claims in the application.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

Claims 1 and 5-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Havens et al for the type of reasons set forth in the previous office action of 2/11/03.

The claims are drawn to a method of increasing loading of active enzyme immobilized in a polyurethane polymer by synthesizing the polymer in a reaction mixture containing water and enzyme to provide an enzyme loading of the polymer of greater than approximately 0.1 percent by weight of the polymer, and including a sufficient amount of surfactant in the reaction mixture to increase enzyme activity at the enzyme loading.

Havens et al disclose immobilizing an enzyme in a polyurethane polymer by synthesizing the polymer in a reaction mixture containing the enzyme and a surfactant. Loading of enzyme of at least 0.1 wt% would have been inherent in method of Havens et al since the polymer may contain 5 mg of protein per

gram of prepolymer resin (page 2256, right col, line 17 from the bottom) which is 0.5 wt of protein%, and the crude enzyme extract is partially purified by ammonium sulfate precipitation (page 2256, left col, first complete paragraph). The surfactant used by Havens et al would have inherently provided increased enzyme activity at the enzyme loading.

Response to Arguments

Applicant's arguments of 8/14/03 and declaration filed 11/18/02 have been fully considered but they are not persuasive.

Applicants urge that the 0.5 wt% protein in the polymer of Havens et al contains a much lower concentration of enzyme, and based on mathematical calculations presented in the declaration, assert that enzyme loading of the Havens et al polymer is only .0058 wt%.

The mathematical calculations are unpersuasive since they are based on the polymer of Havens et al containing 2.9 mg protein per g prepolymer whereas Havens et al disclose that 5 mg protein per g prepolymer may be present. Furthermore, the calculations are based on the rate of reduction in parathion concentration in Figure 1 of Havens et al. However, the rate of reduction in parathion content could have been affected by factors other than only the amount of active enzyme present in the polymer such as the ability of the parathion substrate to

contact all active enzyme in the polymer. The polymer could have partially blocked access of the substrate to the entrapped enzyme. Therefore, there could have been substantially more active enzyme in the polymer than appears from the rate of substrate reduction. Furthermore, in addition to the active enzyme, there could have been a substantial amount of inactive enzyme in the polymer. The present claims do not require a certain amount of the loaded enzyme to be active enzyme. The present claims and specification do not require conditions different than used by Havens et al that would have resulted in greater enzyme loading than obtained by Havens et al.

The calculations presented by applicants and in the declaration are unpersuasive that the 5.0 mg protein loaded by Havens et al does not result in an amount of enzyme loading as claimed.

Claims 3 and 4 are allowable, but are objected to as being dependent on a rejected claim.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action

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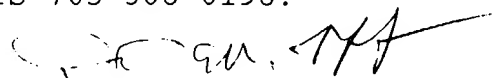
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is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David M. Naff whose telephone number is 703-308-0520. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Wityshyn can be reached on 703-308-4743. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.



David M. Naff
Primary Examiner
Art Unit 1651